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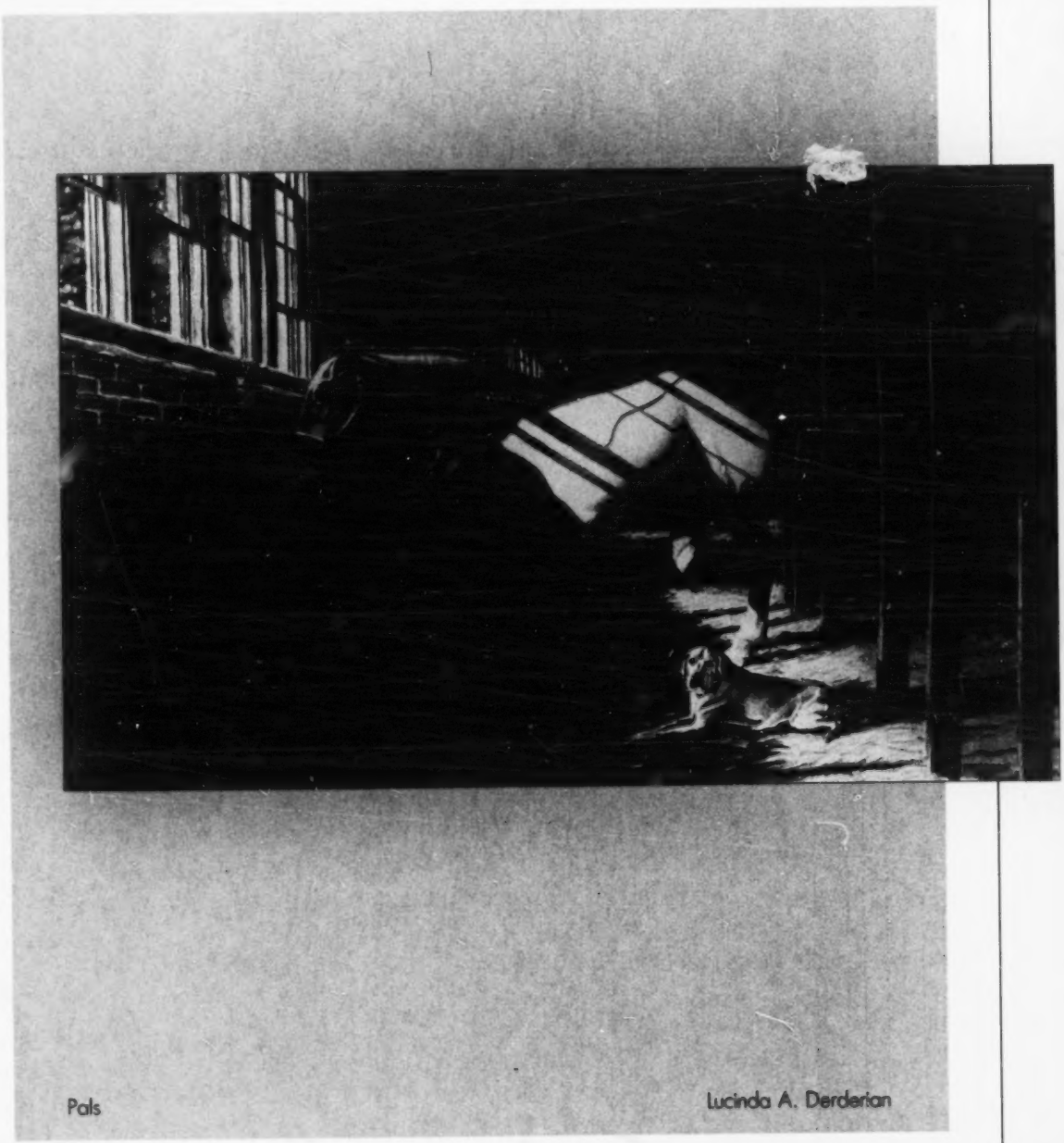

Pals

Lucinda A. Derderian

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About the cover

Lucinda Derderian, a veterinary technician at North Shore Animal Hospital in Lynn, Massachusetts, is a part-time artist specializing in portraits of horses.

People associated with the veterinary profession, via their work or family relation to a veterinarian, who wish to have their animal art considered for reproduction on the cover of the JAVMA should send a color photograph (no larger than 5″ × 7″) to Dr. Janis H. Audin, AVMA, 1931 N Meacham Rd, Suite 100, Schaumburg, IL 60173-4360.

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VBPA

Activities Divisions. Computer and telephone equipment is centralized in one room on the fourth floor.

Multicolored carpet with blue and mauve is used throughout the space, and it is accented with solid blue and mauve inlays. Walls and panels for system furniture are predominantly light blue. The woodwork is cherry-stained mahogany.

Several businesses have leased the available suites on the first floor. The entire second floor is leased to a health maintenance organization. The third floor includes numerous private offices and support spaces. Office space is being kept available on the third floor for occupancy by other veterinary medical groups. Several groups have already expressed interest in some of the space.

The move to the new AVMA building signifies more than a mere move to more space. It provides an opportunity for the AVMA to provide enhanced member services and to increase support to and interaction with other related groups. The AVMA Officers, Executive Board, staff, and members who have visited have all been proud of the facility representing our Association and our profession. An open invitation is extended to visit us whenever you have the opportunity.

Membership

AVMA's membership increased by 3% to 52,183 members at the end of 1991. The 2,623 new members include 2,021 new graduates. Of the 2,025 graduates of US veterinary colleges during 1991, 1,996 (98.5%) joined the AVMA. All of the graduates from 14 veterinary colleges joined the Association. The Association lost 1,097 members during the year due to death (187), resignation (81), and nonpayment of dues (829). As shown in the table below left, 76.1% of the US members are in private practice; 7.5% are active in academic disciplines and clinical specialties; 8.1% are involved in public health, regulatory, military, and other activities; 5.7% are retired; and 2.6% (mostly new graduates) are in unknown activities.

AVMA Membership According to Professional Activity—Dec 31, 1991

Bovine practice (exclusive)	481
Equine practice (exclusive)	1,921
Porcine practice (exclusive)	75
Large animal practice (all species)	1,518
Mixed practice (predominantly large animal)	4,430
Mixed practice (50-50 large and small)	3,382
Mixed practice (predominantly small animal)	5,408
Small animal practice (exclusive)	22,201
Poultry practice (exclusive)	144
Feline practice (exclusive)	144
Anatomy	89
Biochemistry	11
Microbiology	271
Parasitology	68
Pathology	901
Pharmacology	87
Physiology	107
Radiology	136
Toxicology	155
Surgery	446
Pathology, Avian	75
Pathology, Clinical	146
Ophthalmology	135
Nutrition	71
Clinician	300
Theriogenology	145
Anesthesiology	95
Internal Medicine	245
Cardiology	38
Dermatology	73
Neurology	25
Epidemiology	95
Oncology	34
Aquatic	45
Avian Medicine	126
Ethology	6
Veterinary public health	224
Veterinary preventive medicine	67
Teaching and research	501
Regulatory veterinary medicine	682
Administrative	179
Laboratory animal medicine	714
Wildlife, zoo and fur-bearing animals	261
Extension	57
Diagnostic veterinary medicine	160
Industrial veterinary medicine	430
Military veterinary service	407
Veterinary technician educator	55
Other veterinary medicine	466
Retired	2,970
Unknown professional activity	1,381
Total membership	52,183

Journal Subscriptions

Although the majority of subscriptions to the AVMA journals go to members, nonmember subscriptions provided $320,000 income to the AVMA in 1991. Members received more than 48,800 subscriptions to the *JAVMA* and 5,800 subscriptions to the *American Journal of Veterinary Research*. Nearly 2,800 members elected to receive both journals. More than 2,600 nonmembers subscriptions to the *JAVMA* yielded $175,000, and 1,465 nonmember subscriptions to the *AJVR* yielded $145,000. The income from nonmember subscriptions helps to defray the cost of producing the journals while furthering the AVMA objective to disseminate veterinary knowledge. The nonmember subscriptions are primarily to institutions, libraries, and commercial companies, with more than 50% of the subscribers located in other countries.

Dues Increase

In July 1991, the House of Delegates approved a Bylaws amendment to increase AVMA member dues to $175 per year for active members and $150 for associate and affiliate members. The increase resulted from the increased cost to accomplish all of the functions and to carry out all the activities described in these pages. As those costs increased, non-dues revenue decreased because of sharply lower interest rates that reduced investment income.

Although the dues increase becomes effective during a recessionary period in the nation's economy, the activity it supports is essential to the advancement of the veterinary profession at a critical time. Most significant among the problems being addressed are costly legislative initiatives that are essential to try to secure

authority in the law for veterinarians to be able to practice effectively, using human-labeled pharmaceuticals and extra-label use of veterinary pharmaceuticals when efficacious label-authorized veterinary products are not available. In addition, a food safety workshop is intended to combat misperceptions in the minds of the public, consumer groups, and congressional staff members that are creating pressure on Congress and the Food and Drug Administration to limit the pharmaceuticals available to veterinarians.

AVMA Directory

The annual *AVMA Directory* is well received and much used by the members. A recent survey reported that 65% of the members regularly refer to the Directory.

The 1992 *AVMA Directory* was prepared, printed, and mailed in December to all AVMA members. The six-month effort involved collecting current information from all organizations, schools, government agencies, and specialty groups and updating the reference section in which they are listed. The AVMA film and videotape catalog was updated as was information in the *Digest of Practice Acts* and the *Catalog of materials* available from the AVMA. Alphabetic and geographic membership listings were edited three times, and advertisements were sold and included in the publication.

We appreciate the cooperation of all individuals and organizations that provided updated data in a timely manner to enable us to meet the production deadlines. We also appreciate the support of advertisers and other purchasers. The income derived from those sources has enabled us to keep the net production cost to less than $2.50 per member from dues income.

Membership Benefits and Services

In addition to the very important intangible benefits of governmental affairs representation, public information, educational quality assurance, and scientific publications that are described throughout this summary report, the AVMA continues to try to negotiate favorable group rates for services based on the collective buying power of the total membership. In addition to AVMA's highly beneficial insurance programs, AVMA members now benefit from a number of services at rates that are significantly less than rates available to the general public.

American Bankcard Service—The American Bankcard Service offers to process members' Mastercard and Visa charges at the low rate of 1.7% plus 20 cents per transaction. The rate will be adjusted only to accommodate changes in the rates charged to the American Bankcard Service by Mastercard and Visa. Members who are not yet using the service should call 1-800-933-0983 to enroll or to secure further information.

Relocation Services—Mayflower Van Lines and North American Van Lines offer relocating AVMA members substantial discounts from interstate tariff rates for their moves. Although local market competition may produce even greater savings, and it pays to secure competitive bids, members are assured discounts of 36 to 40% by Mayflower and North American. For Mayflower service, call Janice Elges at Glen Ellyn Mayflower 1-800-323-1302 (In Illinois, call 708-543-0500). For North American Van Lines call John Simon at George Noffs Moving and Storage 1-800-323-7790 (In Illinois, call 708-870-5554).

Automobile Rentals—Alamo Rent-a-Car and Budget Rent-a-Car companies offer AVMA members their corporate rates for automobile and truck rentals. More than 250 member rentals were reported by the two companies, which also pay a 5% royalty to the AVMA on each rental. Thus, members who use the programs save directly on their rental expenses, and indirectly by increasing income to the association that helps defray its cost of operation.

Long-distance Telephone Discounts—In July 1990, AVMA established a long-distance telephone discount program with Telcom Advantage Group, an aggregator of AT&T services. Although the program has provided significant discounts to those members whose accounts were activated, the program as a whole has failed to meet expectations. Many members who applied for the program service experienced long delays before they were activated, and some suffered interruption of all long-distance service for several days to two weeks. Although residential service was promised, AT&T limited availability only to business lines, and AT&T has significantly increased the applicable tariff rates.

Therefore, AVMA has terminated the original program and has, after considerable study, entered an

agreement with US Sprint to offer discount long distance services for members' business and residential telephones. The 5% discount on Sprint's low rates now provides a greater savings than the original program at the current rates. Sprint offers responsive service and a range of service options that are available with one telephone call. Members should call 1-800-473-0898 to enroll or to secure further information about the program.

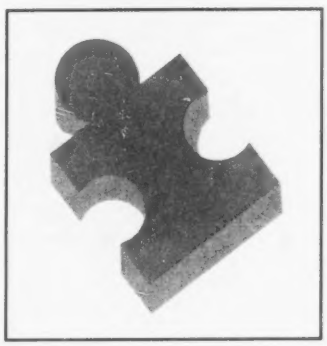
The AVMA is continuing to seek other opportunities to provide quality services to its members at favorable prices.

Career Development Center

The Career Development Center organized a full-day program on careers at the Seattle AVMA meeting. The program included information on how to write a cover letter and resume; how to survive an interview; positions in industry, administration, and management; and how to change careers. A *Career Development and Placement Manual* was developed and distributed with information on obtaining positions in the federal government and career opportunities in veterinary medicine.

The Symposium on Public and Corporate Veterinary Medicine at College Park, Maryland on September 15-17, 1991 provided vital information on characteristics, attributes, and qualifications needed for positions in public and corporate veterinary practice. Participants agreed that oral, written, and computer communication skills were essential for positions in industry and the government. Being a team player also was identified as an essential characteristic. A list of unmet opportunities (positions that veterinarians could but are not filling) was developed. The Symposium Proceedings were published in the February 1, 1992 issue of *JAVMA*.

A new brochure that explained the Placement Service of AVMA's Career



Development Center is now available.

The profession's response to the Placement Service continues to be phenomenal. In the past year, the Placement Service provided on-site services at the following national veterinary meetings: AVMA, Eastern States Veterinary Conference, Western Veterinary Conference, American Association of Swine Practitioners, American Animal Hospital Association, Central States Veterinary Conference, American Association of Bovine Practitioners, and American Association of Equine Practitioners.

Through the Placement Service, firms, institutions, and veterinary practices, which sought services of a veterinarian, a relief veterinarian, or a veterinary technician, found qualified candidates. Veterinarians who sought a new position, a postgraduate program, or a career change found suitable opportunities. Placement services also were available to veterinary students and veterinary technicians.

Career Opportunities Centers were presented at the AVMA meeting in Seattle, the Student AVMA Symposium in Madison, Wisconsin, and the Symposium on Public and Corporate Veterinary Practice in College Park, Maryland. The Centers provided information about career opportunities in aquatic medicine, Animal and Plant Inspection Service, Food Safety and Inspection Service, Peace Corps, and US Public Health Service: Centers for Disease Control, Food and Drug Administration, and National Institutes of Health.

During 1991, senior veterinary students participated in AVMA-funded precepteeships at the Center for Disease Control, National Animal Disease Center, and AVMA's Governmental Relations Division. The Placement Service also listed other precepteeships with the Animal and Plant Inspection Service, Animal Health Institute, industry, and private clinical practices.

Information on career opportunities in veterinary medicine was published in *Working Woman* magazine, the *New York Times*, the *Chicago Tribune*, and *Connections*, a magazine for college-age American Express card holders. An advertisement "Here's your opportunity to be a veterinarian—a scientist and a leader on the animal health team" appeared in the *Directory of the National Association of Advisors for the Health Professions*.

AVMA Governmental Relations Division

Veterinarians and organized veterinary medicine jumped into the 1990s with a very active year of political participation. AVMA's Governmental Relations Division (GRD) enjoyed a year of unsurpassed growth and rising influence in our nation's

Reports on Wildlife and Laboratory Animals

Prevalence of *Toxoplasma gondii* infection in raccoons

J. P. Dubey, MVSc, PhD; A. N. Hamir, BVSc, PhD; C. A. Hanlon, VMD; C. E. Rupprecht, VMD, PhD

Summary: *Serum samples from 427 raccoons (93 from Pennsylvania, 45 from New Jersey, 72 from South Carolina, 68 from Virginia, 30 from Iowa, and 119 from Ohio) were evaluated for* Toxoplasma gondii *antibodies in dilutions of 1:25, 1:50, and 1:500. The distribution of* T gondii *antibody titers was < 1:25 for 212 raccoons (49.6%), 1:25 for 34 raccoons (7.9%), 1:50 for 117 raccoons (27.4%), and ≥ 1:500 for 64 raccoons (14.9%). Tissue cysts were seen in the liver, and tachyzoites were in the brain of a raccoon with abnormal neurologic signs and concurrent infection with canine distemper virus. Organisms in the liver were stained with anti-*T gondii *serum, and the raccoon had a* T gondii *titer of 1:160 in the agglutination test.*

Infection by the protozoan parasite, *Toxoplasma gondii*, is prevalent in many warm-blooded species, including human beings.[1] As omnivores, raccoons are considered good monitors of environmental contamination.[2] The purpose of the study reported here was to determine the prevalence of *T gondii* infection in raccoons from Ohio, New Jersey, Delaware, Virginia, Iowa, and Pennsylvania and document *T gondii* in histologic sections of tissues from a raccoon with abnormal neurologic signs.

Materials and Methods

Serologic prevalence of T gondii *in raccoons*—Serum samples from 427 raccoons from Pennsylvania, New Jersey, Ohio, South Carolina, Iowa, and Virginia (Table 1) were obtained as part of a project on the development of oral wildlife rabies vaccination.[3,4] Sera were examined for *T gondii* antibodies, using formalin-preserved tachyzoites in the agglutination test.[5] Three dilutions (1:25, 1:50, and 1:500) of survey sera were tested.

Table 1—Prevalence of Toxoplasma gondii *antibodies in raccoon sera*

State	Area or county	No. tested	% sero-positive	Antibody titers <1:25	1:25	1:50	≥1:500
Pennsylvania	Philadelphia	28	...	4	1	15	8
	Delaware	13	...	6	0	5	2
	York	3	...	2	0	0	1
	Dauphin	1	...	0	0	1	0
	Centre	48	...	36	3	8	1
Sub Total		93	48.3	48	4	29	12
New Jersey	Coastal Delaware River	45	73.3	12	1	19	13
South Carolina	Bull Island	72	34.7	47	4	10	11
Ohio	Southeastern	119	56.3	52	10	41	16
Virginia	Parramore Island	68	36.7	43	6	10	9
Iowa	unk. own	30	66.6	10	9	8	3
Total		427	50.3	212	34	117	64

Case report—A juvenile male raccoon, in a residential, rabies endemic area of Philadelphia, Pa, was observed to have abnormal neurologic signs. The raccoon appeared to be unaware of its surroundings. It was trapped live by local animal control personnel as a rabies suspect, was euthanatized, and submitted to the Wistar Institute for rabies diagnosis. At that time, it was noticed that the raccoon had an ear tag indicating that it had been vaccinated for rabies and had been trapped a week before when it was observed to be healthy.

A complete necropsy was performed. Cervical spinal cord, salivary glands, and blood from the heart were collected for fluorescent antibody testing, virus isolation, and serum neutralization testing for rabies virus. Serum also was used for detection of *T gondii* antibodies, using formalin-preserved antigen in the agglutination test.[5] The serum sample was diluted 2 times up to 1:2,048.

The brain and portions of the heart, diaphragm, tongue, masseter muscle, esophagus, lung, liver, kidney, pancreas, spleen, skin, mesenteric

From the Zoonotic Diseases Laboratory, Livestock and Poultry Sciences Institute, Agricultural Research Service, USDA, Rm 104, Bldg 1040, BARC-East, 10300 Baltimore Blvd, Beltsville, MD 20705-2350 (Dubey), Department of Pathobiology, School of Veterinary Medicine, New Bolton Center, University of Pennsylvania, Kennett Square, PA 19348 (Hamir), and Wistar Institute, Philadelphia, PA 19104-4268 (Hanlon, Rupprecht).

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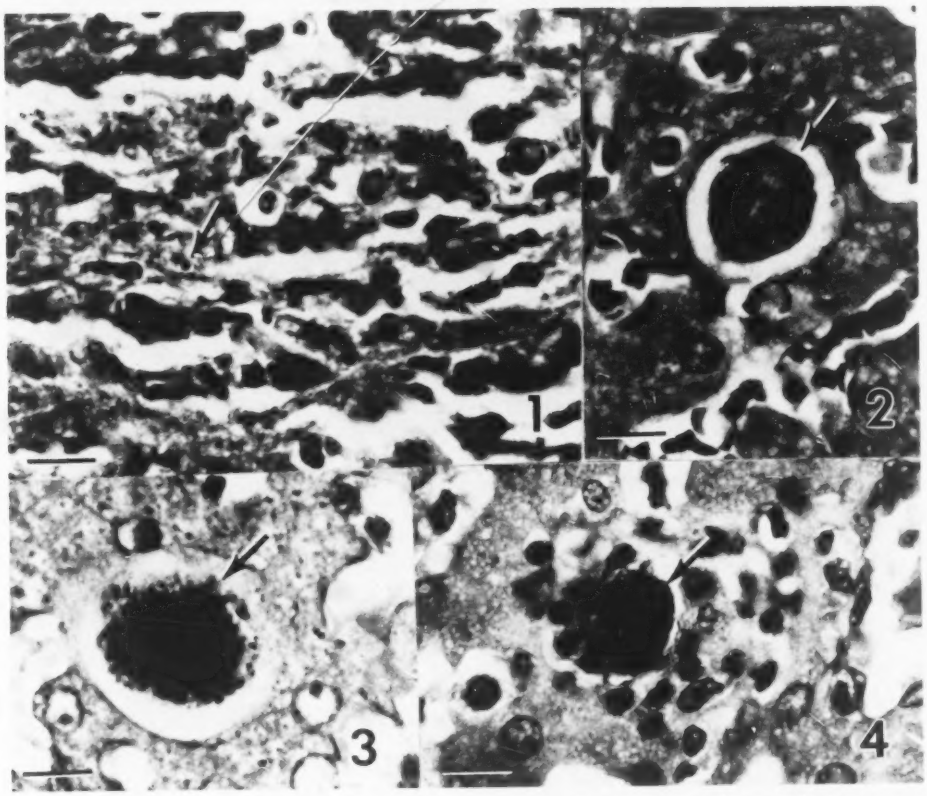

Figure 1—Photomicrographs of Toxoplasma gondii *in the brain (Part 1) and liver (Parts 2-4) of a raccoon. Scale bar for Fig 1 = 13.3 μm. Part 1—Arrow points to a tachyzoite. H&E stain. Part 2—Arrow points to a tissue cyst. H&E stain. Part 3—A tissue cyst (arrow). Periodic acid-Schiff hematoxylin. Part 4—A group of tachyzoites (arrow) surrounded by mononuclear cells. Avidin-biotin complex immunohistochemical stain.*

lymph node, stomach, intestines, urinary bladder, prostate gland, testicles, salivary glands, aorta, adrenal glands, eye, and the cervical spinal cord were fixed in neutral buffered 10% formalin for histologic evaluation. Paraffin sections of liver were reacted with anti-*T gondii* and anti-*Neospora caninum* sera as described.[6]

Results

Antibodies to *T gondii* were found in 50.4% of raccoon sera (Table 1).

The raccoon carcass described in the case report was emaciated and dehydrated. The lungs did not completely collapse when the thorax was opened. There were multifocal grayish, firm lesions (up to 4 mm in diameter) in the parenchyma of the lung. The gastrointestinal tract was empty of ingesta, but 5 adult *Baylisascaris procyonis* were seen in the intestines. The liver contained randomly distributed 1- to 2-mm, pale white lesions. The brain was excessively moist, but was otherwise normal.

In the cerebrum, cerebellum, and the brain stem, randomly distributed foci of gliosis and mononuclear cell infiltrations were seen microscopically. In 1 focus, a few *T gondii* tachyzoites were seen (Fig 1). The meninges were infiltrated with mononuclear cells.

The liver had many randomly distributed small foci of necrosis and infiltrations of inflammatory cells, predominantly macrophages. *Toxoplasma gondii* tissue cysts and tachyzoites were seen in hepatocytes (Fig 1). Organisms in liver stained with anti-*T gondii* serum but not anti-*N caninum* serum in an immunohistochemical test[6] (Fig 1).

The lungs had multifocal to coalescing granulomata attributed to infection with a nematode, *Crenosoma* sp. Elsewhere in the lungs, the alveolar septa were thick and some of the lining epithelial cells had eosinophilic cytoplasmic inclusions. The mesenteric lymph nodes were edematous, extremely hypocellular, and only a few small remnants of lymphoid follicles could be identified in the tissue section. The epithelial cells of the stomach, prostate gland, and epididymis had small eosinophilic cytoplasmic inclusions that were similar to those seen in the epithelial lining cells of air-passages in the lungs. A few, similar eosinophilic inclusions were seen in some of the glial cells in the brain; however, these inclusions were pre-

dominantly intranuclear. The cytoplasmic and the intranuclear inclusions resembled viral inclusions of canine distemper.

Numerous sarcocysts of *Sarcocystis kirkpatricki*[7] were seen in diaphragm, tongue, masseter muscles, and eosophagus. Additionally, 5 sarcocysts were seen in the cerebellum. Lesions were not seen associated with sarcocysts in the CNS.

The *T gondii* antibody titer in the raccoon serum was 1:160. Rabies virus antigen was not detected in the raccoon's brain. The result of the serum neutralization test for rabies virus was negative.

Discussion

Although the seroprevalence of *T gondii* in raccoons in this survey was approximately 2 to 3 times higher than in previous reports,[8-10] the data are not strictly comparable because of differing techniques and survey samples. Dye-test antibodies (≥ 1:16) were found in sera of 23.4% of 77 raccoons from Maryland[8] and 33% of 67 raccoons from Georgia.[9] Walton and Walls[9] also isolated viable *T gondii* from 4 of 50 raccoons from Georgia. Burridge et al[10] found indirect hemagglutination antibodies (≥ 1:64) in 18% of 530 raccoons from Florida. The sensitivity and specificity of these serologic tests for diagnosis of toxoplasmosis have not been evaluated in sera from raccoons inoculated with *T gondii*; however, the agglutination test has been found generally more sensitive than the dye test.[1] The indirect hemagglutination has been found to be the least sensitive test when sera from other experimentally infected animals are used.[1]

The seroprevalence of *T gondii* in the present study may be higher than reported because we considered a titer of 1:25 as positive, and other data were not available as a guide for determining what titer is diagnostic in raccoons. Seroprevalence data in raccoons indicate a heavy contamination of the environment by *T gondii*, and these data should serve as baseline data to monitor environmental contamination by *T gondii*.

Results of routine histologic study in raccoons (data not shown) indicated that *T gondii* organisms are rarely observed in tissue sections, whereas *Sarcocystis* sarcocysts are found in approximately half the raccoons studied histologically; sarcocysts have not been reported from the brain of raccoons.[7] The raccoon of the clinical case described in this report had evidence of distemper virus infection, which may have attributed to immunosuppression leading to recrudescence of a latent *T gondii* infection. The identification of well-developed tissue cysts in the liver supported this hypothesis. Although *T gondii* does encyst in visceral organs,[1] most tissue cysts are found in the brain and muscles; therefore, the finding of tissue cysts in the liver of the raccoon was unexpected. The role of *T gondii* and canine distemper virus in inducing abnormal neurologic signs could not be determined in our study. Only a few *T gondii* tachyzoites were seen in lesions. The low *T gondii* antibody titer (1:160) did not aid diagnosis.

Clinical toxoplasmosis was reported only once in the literature in 2 raccoons.[11] One raccoon had meningoencephalitis, and the other had interstitial pneumonia in association with *T gondii*-like organisms. Both raccoons also had distemper virus infection. However, because isolation and serologic examinations were not made, the diagnosis could not be confirmed.

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